

To: Distribution
 From: John Gipson
 Re: Effect of Correlated Noise on arc-source position scatter.
 Date: December 4, 2008

Summary

I ran solutions where sets of sources were estimated as arc parameters. I found that that including correlated noise reduced the scatter of source positions during CONT05.

Description of Solutions

David Gordon recently ran a series of solutions where the positions of subset of the sources were estimated as arc parameters. This was done to get a handle on the source position stability. In all of the solutions obvious bad sources were excluded from the data. In addition, approximately 400 sources observed in only a few sessions were excluded from the global solution. (David did not want to have the CGM cluttered with source positions that were poorly determined.) The remaining solutions differed in how they treated ~300 well sources with many observations. In the first solution all 300 were estimated as global parameters. In the remaining solutions this 300 was divided into 4 sets, and 225 of the sources were estimated as global, while the remaining 75 were added to the sources that were estimated as arc parameters. The table below summarizes the solutions.

Table 1. Treatment of Sources

	Ts4a	Ts4b	Ts4c	Ts4d	Ts4e
Global	~300	225	225	225	225
Excluded	Radio stars Gravitational lenses				
Arc	~400 sparsely observed sources				
Other arc		First 75	Second 75	Third 75	Fourth 75

Effect of including Correlated Noise

For each of the solutions I ran two solutions. A standard solution, and one which assumed there was 6 ps of atmospheric correlated noise¹. The solutions used the standard Goddard baseline reweighting files. These results are displayed in the following sections. The table on the right summarizes the results over all the sessions. In RA about 80% of the sources showed improvement, with the average reduction being 12%. In Dec about 65% of the sources had reduced scatter, with the average improvement being about 8%.

Summary	RA	Dec
#>0	50	43
Number	63	63
Median	10.1%	5.6%
Average	11.9%	8.2%

¹ Additional noise at each station that goes like 6ps*Map(el)

Results for Solution ts4a

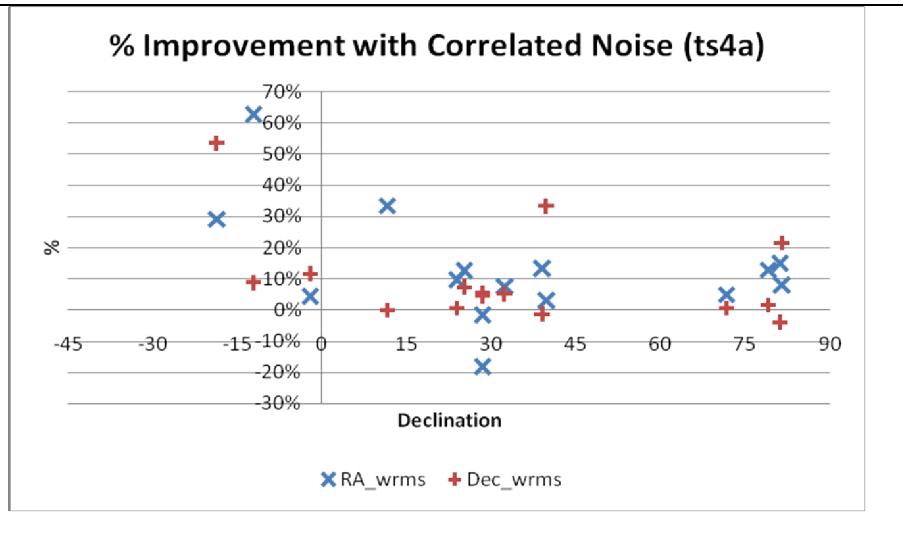
The table compares the scatter for the solution with correlated noise and the standard solution for the CONT05 dataset. The weighted RMS (wrms) of the scatter in station position for RA and Dec in micro-arcseconds is given for both. Also included is the difference in wrms between normal solution and one with correlated noise. This gives the reduction in wrms due to correlated noise. The last two columns show the percent improvement.

Effect of Correlated Noise on ts4a

Src	Correlated WRMS			Normal WRMS			Difference		Difference(%)		
	RA	DEC	RA	Dec	#	RA	Dec	RA	Dec	RA	Dec
0014+813	0.286	81.586	664.1	87.4	15	717.0	106.2	52.9	18.7	8.0%	21.4%
0201+113	2.063	11.579	154.9	317.8	14	206.6	317.3	51.7	-0.5	33.4%	-0.1%
0434-188	4.617	-18.747	275.7	537.3	6	355.8	824.5	80.1	287.2	29.1%	53.5%
0556+238	5.992	23.898	151.8	181.3	15	166.6	182.4	14.8	1.0	9.8%	0.6%
0718+793	7.437	79.192	723.1	77.8	15	816.1	79.0	93.0	1.2	12.9%	1.5%
4C39.25	9.451	39.039	67.1	71.8	15	76.1	70.8	8.9	-0.9	13.3%	-1.3%
OK290	9.947	25.254	595.3	414.8	11	671.0	445.1	75.8	30.4	12.7%	7.3%
1044+719	10.808	71.727	122.0	47.8	15	127.9	48.0	5.9	0.2	4.9%	0.5%
1053+815	10.97	81.242	687.3	142.9	15	790.6	137.2	103.3	-5.7	15.0%	-4.0%
1308+326	13.175	32.345	121.6	111.2	15	130.7	116.9	9.1	5.7	7.5%	5.1%
1351-018	13.902	-2.101	202.1	294.0	11	211.1	328.0	9.0	34.0	4.5%	11.6%
OQ208	14.117	28.454	119.4	123.2	15	117.6	128.6	-1.8	5.4	-1.5%	4.4%
DA426	16.898	39.76	284.4	236.4	10	293.3	315.0	8.9	78.6	3.1%	33.3%
2234+282	22.606	28.483	202.6	169.1	11	165.6	178.2	-37.0	9.1	-18.2%	5.4%
2243-123	22.772	-12.114	132.6	276.1	15	215.9	300.1	83.3	24.0	62.8%	8.7%
1308+326	13.2	32.3	121.7	116.5	15	132.0	121.6	10.3	5.1	8.5%	4.4%
1334-127	13.6	-13.0	209.2	124.6	15	219.4	109.5	10.2	-15.0	4.9%	-12.1%

The table below summarizes the improvement over all sources.

Summary	RA	Dec
#>0	13	12
Number	15	15
Median	9.8%	5.1%
Average	13.1%	9.8%



Results for Solution ts4b

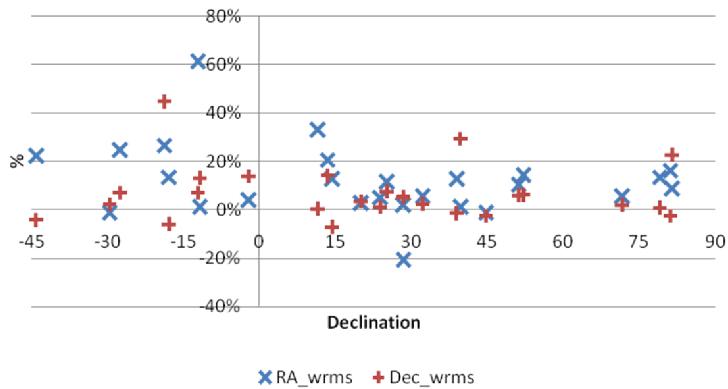
The table compares the scatter for the solution with correlated noise and the standard solution for the CONT05 dataset. The weighted RMS (wrms) of the scatter in station position for RA and Dec in micro-arcseconds is given for both. Also included is the difference in wrms between normal solution and one with correlated noise. This gives the reduction in wrms due to correlated noise. The last two columns show the percent improvement.

Src	Correlated			Normal			Difference		Difference(%)	
	RA	DEC	WRMS	RA	Dec	#	RA	Dec	RA	Dec
0014+813	0.286	81.586	675.639	89.136	15	735.6	109.3	59.9	20.1	8.9% 22.6%
0201+113	2.063	11.579	147.939	313.338	14	196.9	314.4	49.0	1.0	33.1% 0.3%
0434-188	4.617	-18.747	282.808	548.205	6	357.4	792.3	74.6	244.1	26.4% 44.5%
0528+134	5.516	13.532	83.576	116.809	15	100.6	133.1	17.1	16.2	20.4% 13.9%
0537-441	5.647	-44.086	182.787	223.923	14	223.5	214.2	40.7	-9.7	22.3% -4.3%
0556+238	5.992	23.898	152.969	184.078	15	160.6	185.7	7.6	1.7	5.0% 0.9%
0642+449	6.776	44.855	50.029	33.978	15	49.4	33.1	-0.6	-0.9	-1.2% -2.7%
0718+793	7.437	79.192	732.769	77.013	15	830.4	77.5	97.6	0.5	13.3% 0.7%
0727-115	7.505	-11.687	89.381	74.493	15	90.5	84.2	1.1	9.7	1.3% 13.0%
OJ287	8.914	20.109	62.914	46.268	15	64.7	47.8	1.8	1.6	2.9% 3.4%
4C39.25	9.451	39.039	70.168	68.329	15	79.1	67.3	8.9	-1.1	12.7% -1.6%
OK290	9.947	25.254	589.787	419.526	11	658.3	450.6	68.5	31.1	11.6% 7.4%
1034-293	10.621	-29.567	370.762	431.33	8	366.9	440.2	-3.8	8.9	-1.0% 2.1%
1044+719	10.808	71.727	116.583	48.097	15	123.0	49.0	6.4	0.9	5.5% 1.8%
1053+815	10.97	81.242	689.377	143.776	15	800.7	139.9	111.3	-3.9	16.1% -2.7%
1308+326	13.175	32.345	120.872	116.27	15	127.6	118.9	6.7	2.6	5.5% 2.2%
1351-018	13.902	-2.101	197.182	282.997	11	205.1	321.4	8.0	38.4	4.0% 13.6%
OQ208	14.117	28.454	116.916	123.305	15	119.2	129.3	2.3	6.0	1.9% 4.8%
1519-273	15.377	-27.503	340.172	282.214	15	424.4	301.9	84.3	19.7	24.8% 7.0%
DA426	16.898	39.76	282.597	239.25	10	285.9	309.0	3.3	69.8	1.2% 29.2%
1739+522	17.677	52.195	56.581	45.37	15	64.7	48.1	8.2	2.7	14.4% 5.9%
1958-179	20.016	-17.816	139.849	125.905	15	158.6	118.3	18.7	-7.6	13.4% -6.1%
3C418	20.644	51.32	221.121	98.026	15	244.3	103.8	23.1	5.8	10.5% 5.9%
2136+141	21.65	14.393	66.292	52.608	15	74.8	48.8	8.5	-3.8	12.8% -7.3%
2234+282	22.606	28.483	199.023	171.306	11	157.9	180.1	-41.1	8.8	-20.6% 5.1%
2243-123	22.772	-12.114	126.864	265.926	15	204.5	284.3	77.7	18.4	61.2% 6.9%

The table below summarizes the improvement over all sources.

Summary	RA	Dec
#>0	23	20
Number	26	26
Median	11.0%	4.1%
Average	11.8%	6.4%

% Improvement with Correlated Noise (ts4b)



Results for Solution ts4c

The table compares the scatter for the solution with correlated noise and the standard solution for the CONT05 dataset. The weighted RMS (wrms) of the scatter in station position for RA and Dec in micro-arcseconds is given for both. Also included is the difference in wrms between normal solution and one with correlated noise. This gives the reduction in wrms due to correlated noise. The last two columns show the percent improvement.

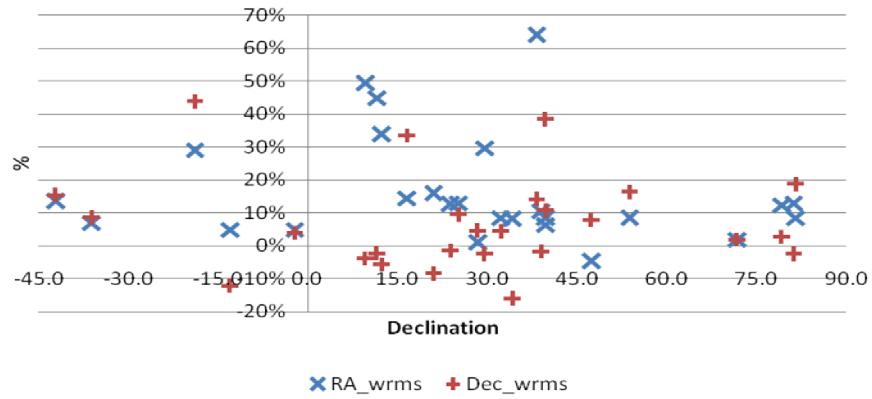
Src	Correlated						Normal				Difference		Difference(%)		
	WRMS			WRMS			WRMS		Difference		RA	Dec	RA	Dec	
	RA	DEC	RA	Dec	#	RA	Dec	RA	Dec	RA	Dec	RA	Dec	RA	Dec
0014+813	0.3	81.6	653.1	84.2	15	709.1	99.9	56.0	15.7	8.6%	18.7%				
0201+113	2.1	11.6	148.1	310.6	14	214.7	303.6	66.6	-6.9	44.9%	-2.2%				
0235+164	2.6	16.6	58.1	40.8	15	66.5	54.5	8.4	13.6	14.5%	33.4%				
0402-362	4.1	-36.1	672.2	479.6	13	719.1	520.7	46.9	41.2	7.0%	8.6%				
0434-188	4.6	-18.7	256.0	565.3	6	330.7	812.9	74.7	247.5	29.2%	43.8%				
0552+398	5.9	39.8	49.1	33.3	15	53.4	36.9	4.3	3.6	8.7%	10.7%				
0556+238	6.0	23.9	149.3	181.2	15	168.5	178.5	19.1	-2.6	12.8%	-1.4%				
0718+793	7.4	79.2	717.5	81.4	15	806.2	83.6	88.7	2.2	12.4%	2.7%				
0749+540	7.9	53.9	106.1	72.5	15	115.3	84.3	9.2	11.8	8.7%	16.3%				
4C39.25	9.5	39.0	71.4	71.9	15	78.9	70.6	7.6	-1.3	10.6%	-1.8%				
OK290	9.9	25.3	592.1	409.7	11	669.2	448.7	77.2	39.0	13.0%	9.5%				
0955+476	10.0	47.4	58.7	41.0	15	56.1	44.2	-2.7	3.2	-4.5%	7.8%				
1044+719	10.8	71.7	120.0	44.1	15	122.4	44.9	2.4	0.8	2.0%	1.9%				
1053+815	11.0	81.2	684.3	143.9	15	773.0	140.4	88.7	-3.5	13.0%	-2.5%				
3C274	12.5	12.4	171.6	222.9	8	229.9	210.4	58.3	-12.5	34.0%	-5.6%				
1308+326	13.2	32.3	121.7	116.5	15	132.0	121.6	10.3	5.1	8.5%	4.4%				
1334-127	13.6	-13.0	209.2	124.6	15	219.4	109.5	10.2	-15.0	4.9%	-12.1%				
1351-018	13.9	-2.1	221.3	319.7	11	232.2	332.1	10.9	12.4	4.9%	3.9%				
OQ208	14.1	28.5	117.0	124.1	15	118.3	129.9	1.3	5.7	1.1%	4.6%				

1417+385	14.3	38.4	203.4	463.0	6	334.1	528.4	130.7	65.4	64.2%	14.1%
1424-418	14.5	-42.1	254.0	296.0	15	288.9	341.4	35.0	45.4	13.8%	15.3%
1611+343	16.2	34.2	48.3	40.1	15	52.3	33.7	4.1	-6.4	8.4%	-16.0%
DA426	16.9	39.8	279.3	237.7	10	297.1	329.0	17.8	91.3	6.4%	38.4%
1749+096	17.9	9.7	53.4	35.9	15	79.8	34.5	26.4	-1.4	49.5%	-3.9%
1923+210	19.4	21.1	109.5	64.6	15	127.2	59.1	17.7	-5.5	16.2%	-8.5%
2113+293	21.3	29.6	104.6	121.1	15	135.6	118.1	31.0	-3.0	29.6%	-2.5%
3C446	22.4	-5.0	101.2	47.2	15	98.6	43.8	-2.6	-3.4	-2.6%	-7.1%
2234+282	22.6	28.5	206.2	168.2	11	170.3	171.5	-35.9	3.3	-17.4%	2.0%
2243-123	22.8	-12.1	140.5	276.2	15	222.6	307.6	82.1	31.4	58.4%	11.4%
2255-282	23.0	-28.0	462.3	410.2	15	442.8	397.9	-19.5	-12.3	-4.2%	-3.0%

The table below summarizes the improvement over all sources.

Summary	RA	Dec
#>0	26	18
Number	30	30
Median	9.6%	3.3%
Average	15.2%	6.0%

% Improvement with Correlated Noise (ts4c)



Results for Solution ts4d

The table compares the scatter for the solution with correlated noise and the standard solution for the CONT05 dataset. The weighted RMS (wrms) of the scatter in station position for RA and Dec in micro-arcseconds is given for both. Also included is the difference in wrms between normal solution and one with correlated noise. This gives the reduction in wrms due to correlated noise. The last two columns show the percent improvement.

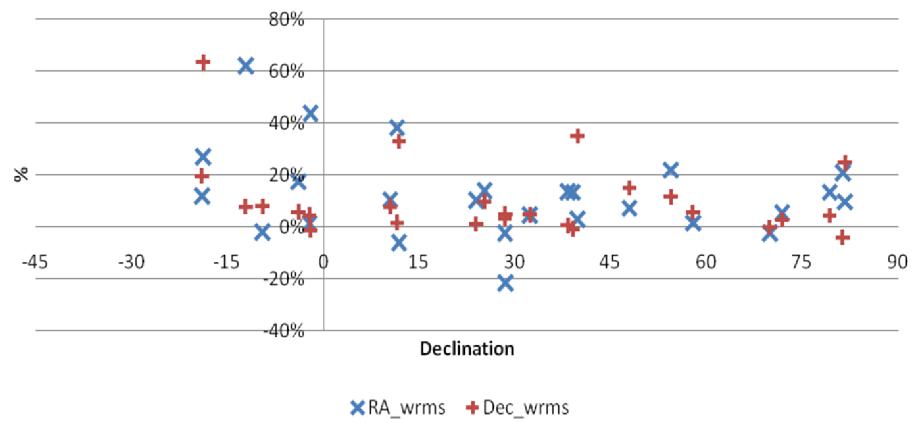
Src	RA	DEC	Correlated WRMS			Normal WRMS			Difference		Difference(%)	
			RA	Dec	#	RA	Dec	RA	RA	Dec	RA	Dec
0014+813	0.286	81.586	619.523	87.315	15	678.9	108.6	59.4	21.3	9.6%	24.4%	
0048-097	0.845	-9.485	200.988	131.594	15	196.9	141.6	-4.1	10.0	-2.0%	7.6%	
0119+115	1.362	11.831	196.448	151.439	14	184.4	200.9	-12.1	49.4	-6.1%	32.6%	
0133+476	1.616	47.858	109.502	60.454	15	117.2	69.3	7.7	8.9	7.0%	14.7%	
0201+113	2.063	11.579	171.109	312.514	14	236.4	317.1	65.3	4.6	38.2%	1.5%	
0434-188	4.617	-18.747	267.196	511.195	6	339.3	834.3	72.1	323.1	27.0%	63.2%	
0458-020	5.02	-1.987	122.011	108.732	15	175.2	107.2	53.2	-1.5	43.6%	-1.4%	
0556+238	5.992	23.898	149.31	176.979	15	164.6	178.5	15.3	1.5	10.2%	0.8%	

0718+793	7.437	79.192	737.431	78.477	15	834.4	81.8	96.9	3.3	13.1%	4.2%
4C39.25	9.451	39.039	68.188	75.078	15	77.2	74.4	9.0	-0.7	13.2%	-1.0%
OK290	9.947	25.254	595.972	406.353	11	678.7	445.3	82.7	39.0	13.9%	9.6%
1044+719	10.808	71.727	135.408	48.005	15	142.6	49.2	7.2	1.2	5.3%	2.6%
1053+815	10.97	81.242	672.248	142.251	15	811.7	136.1	139.4	-6.1	20.7%	-4.3%
1124-186	11.451	-18.955	239.137	128.84	15	267.1	153.8	27.9	25.0	11.7%	19.4%
1128+385	11.515	38.255	92.186	107.4	15	104.6	107.7	12.4	0.3	13.5%	0.3%
1300+580	13.048	57.81	111.608	30.7	15	113.2	32.4	1.6	1.7	1.4%	5.4%
1308+326	13.175	32.345	132.255	107.377	15	138.0	112.1	5.7	4.7	4.3%	4.4%
1351-018	13.902	-2.101	199.466	295.307	11	201.8	307.9	2.4	12.6	1.2%	4.3%
OQ208	14.117	28.454	131.09	124.861	15	127.8	128.7	-3.3	3.8	-2.5%	3.1%
1418+546	14.33	54.387	217.136	180.052	15	264.5	200.4	47.4	20.3	21.8%	11.3%
1606+106	16.146	10.485	86.317	63.837	15	95.3	68.6	9.0	4.8	10.4%	7.5%
DA426	16.898	39.76	280.529	237.166	10	288.3	319.5	7.8	82.4	2.8%	34.7%
1741-038	17.733	-3.835	96.505	59.897	15	113.2	63.2	16.7	3.3	17.3%	5.5%
3C371	18.114	69.824	95.9	49.497	15	93.4	49.3	-2.5	-0.2	-2.6%	-0.3%
2234+282	22.606	28.483	198.621	176.346	11	155.4	184.6	-43.2	8.2	-21.8%	4.7%
2243-123	22.772	-12.114	130.483	274.778	15	211.4	295.6	80.9	20.8	62.0%	7.6%

The table below summarizes the improvement over all sources.

Summary	RA	Dec
#>0	21	22
Number	26	26
Median	10.3%	5.0%
Average	12.0%	10.1%

% Improvement with Correlated Noise (ts4d)



Results for Solution ts4e

The table compares the scatter for the solution with correlated noise and the standard solution for the CONT05 dataset. The weighted RMS (wrms) of the scatter in station position for RA and Dec in micro-arcseconds is given for both. Also included is the difference in wrms between normal solution and one with correlated noise. This gives the reduction in wrms due to correlated noise. The last two columns show the percent improvement.

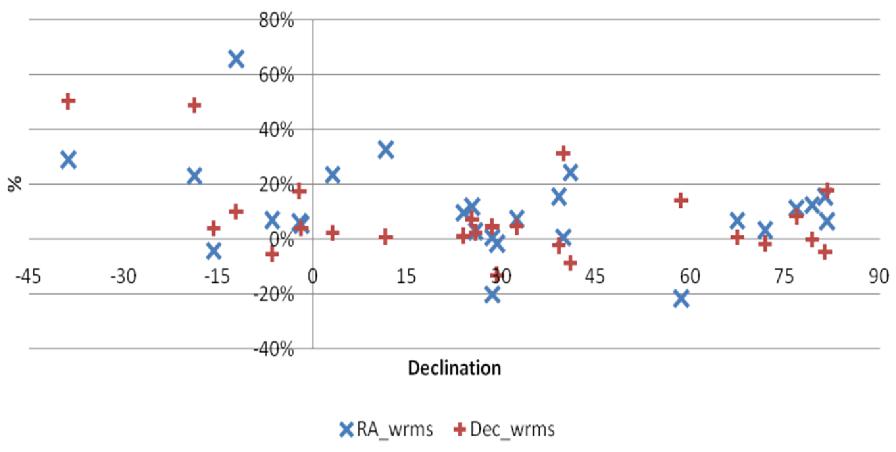
Src	RA	DEC	Correlated WRMS			#	Normal WRMS			Difference RA	Difference(%) RA	Difference(%) Dec
			RA	Dec	#		RA	Dec				
0003-066	0.104	-6.393	326.296	273.678	12	348.8	259.2	22.5	-14.4	6.9%	-5.3%	

0014+813	0.286	81.586	682.899	87.56	15	727.7	103.2	44.8	15.6	6.6%	17.9%
0059+581	1.046	58.403	114.441	39.063	15	89.6	44.6	-24.8	5.5	-21.7%	14.2%
0201+113	2.063	11.579	157.838	321.786	14	209.2	324.4	51.4	2.7	32.6%	0.8%
CTA26	3.659	-1.777	131.15	52.642	15	138.2	54.8	7.0	2.1	5.4%	4.0%
0434-188	4.617	-18.747	288.203	564.205	6	354.8	839.5	66.6	275.3	23.1%	48.8%
0556+238	5.992	23.898	153.444	181.069	15	168.2	183.4	14.7	2.4	9.6%	1.3%
0602+673	6.131	67.349	141.504	55.959	15	151.1	56.4	9.6	0.4	6.7%	0.7%
0607-157	6.161	-15.711	126.978	69.389	15	121.6	72.2	-5.4	2.8	-4.2%	4.0%
0718+793	7.437	79.192	728.497	78.017	15	819.4	77.9	90.9	-0.1	12.5%	-0.1%
0743+259	7.774	25.817	67.381	63.075	15	69.3	64.7	1.9	1.6	2.8%	2.5%
0805+410	8.149	40.879	223.998	246.459	10	278.2	224.9	54.2	-21.5	24.2%	-8.7%
0823+033	8.431	3.157	128.119	234.055	15	158.2	239.6	30.1	5.6	23.5%	2.4%
4C39.25	9.451	39.039	64.806	71.444	15	74.8	69.8	10.0	-1.6	15.4%	-2.3%
OK290	9.947	25.254	593.231	410.075	11	663.5	440.3	70.3	30.2	11.9%	7.4%
1044+719	10.808	71.727	120.39	50.861	15	124.2	50.0	3.8	-0.8	3.2%	-1.7%
1053+815	10.97	81.242	681.412	146.73	15	787.2	140.1	105.8	-6.6	15.5%	-4.5%
1156+295	11.992	29.246	145.46	261.743	9	143.2	227.6	-2.2	-34.1	-1.5%	-13.0%
1308+326	13.175	32.345	126.174	111.491	15	135.4	116.7	9.2	5.2	7.3%	4.7%
1351-018	13.902	-2.101	199.147	291.547	11	211.5	342.6	12.4	51.0	6.2%	17.5%
1357+769	13.965	76.723	207.261	34.697	15	230.4	37.6	23.1	2.9	11.2%	8.3%
OQ208	14.117	28.454	122.536	123.342	15	123.2	128.7	0.7	5.3	0.6%	4.3%
DA426	16.898	39.76	284.24	238.463	10	286.1	313.1	1.8	74.6	0.6%	31.3%
1954-388	19.967	-38.752	145.56	228.856	15	187.8	344.0	42.3	115.1	29.0%	50.3%
2234+282	22.606	28.483	203.97	163.453	11	163.0	171.2	-41.0	7.8	-20.1%	4.8%
2243-123	22.772	-12.114	133.895	270.211	15	221.8	297.5	87.9	27.3	65.7%	10.1%

The table below summarizes the improvement over all sources.

Summary	RA	Dec
#>0	22	19
Number	26	26
Median	7.1%	4.0%
Average	10.5%	7.7%

% Improvement with Correlated Noise (ts4e)



Results for Combined Solution

The table compares the scatter for the solution with correlated noise and the standard solution for the CONT05 dataset. This solution includes ALL of the results from the previous solutions.

Where a source appears in more than one solution, the first is chosen. The weighted RMS (wrms) of the scatter in station position for RA and Dec in micro-arcseconds is given for both. Also included is the difference in wrms between normal solution and one with correlated noise. This gives the reduction in wrms due to correlated noise. The last two columns show the percent improvement.

Src	RA	DEC	Correlated			#	Normal			Difference		Difference(%)	
			WRMS	RA	Dec		WRMS	RA	Dec	RA	Dec	RA	Dec
0014+813	0.286	81.586	664.097	87.416	15	717.0	106.2	52.9	18.7	8.0%	21.4%		
0201+113	2.063	11.579	154.86	317.765	14	206.6	317.3	51.7	-0.5	33.4%	-0.1%		
0434-188	4.617	-18.747	275.698	537.293	6	355.8	824.5	80.1	287.2	29.1%	53.5%		
0556+238	5.992	23.898	151.823	181.34	15	166.6	182.4	14.8	1.0	9.8%	0.6%		
0718+793	7.437	79.192	723.104	77.824	15	816.1	79.0	93.0	1.2	12.9%	1.5%		
4C39.25	9.451	39.039	67.112	71.768	15	76.1	70.8	8.9	-0.9	13.3%	-1.3%		
OK290	9.947	25.254	595.288	414.767	11	671.0	445.1	75.8	30.4	12.7%	7.3%		
1044+719	10.808	71.727	121.951	47.784	15	127.9	48.0	5.9	0.2	4.9%	0.5%		
1053+815	10.97	81.242	687.286	142.908	15	790.6	137.2	103.3	-5.7	15.0%	-4.0%		
1308+326	13.175	32.345	121.593	111.246	15	130.7	116.9	9.1	5.7	7.5%	5.1%		
1351-018	13.902	-2.101	202.053	293.991	11	211.1	328.0	9.0	34.0	4.5%	11.6%		
OQ208	14.117	28.454	119.419	123.217	15	117.6	128.6	-1.8	5.4	-1.5%	4.4%		
DA426	16.898	39.76	284.444	236.404	10	293.3	315.0	8.9	78.6	3.1%	33.3%		
2234+282	22.606	28.483	202.574	169.113	11	165.6	178.2	-37.0	9.1	-18.2%	5.4%		
2243-123	22.772	-12.114	132.64	276.077	15	215.9	300.1	83.3	24.0	62.8%	8.7%		
0528+134	5.516	13.532	83.576	116.809	15	100.6	133.1	17.1	16.2	20.4%	13.9%		
0537-441	5.647	-44.086	182.787	223.923	14	223.5	214.2	40.7	-9.7	22.3%	-4.3%		
0642+449	6.776	44.855	50.029	33.978	15	49.4	33.1	-0.6	-0.9	-1.2%	-2.7%		
0727-115	7.505	-11.687	89.381	74.493	15	90.5	84.2	1.1	9.7	1.3%	13.0%		
OJ287	8.914	20.109	62.914	46.268	15	64.7	47.8	1.8	1.6	2.9%	3.4%		
1034-293	10.621	-29.567	370.762	431.33	8	366.9	440.2	-3.8	8.9	-1.0%	2.1%		
1519-273	15.377	-27.503	340.172	282.214	15	424.4	301.9	84.3	19.7	24.8%	7.0%		
1739+522	17.677	52.195	56.581	45.37	15	64.7	48.1	8.2	2.7	14.4%	5.9%		
1958-179	20.016	-17.816	139.849	125.905	15	158.6	118.3	18.7	-7.6	13.4%	-6.1%		
3C418	20.644	51.32	221.121	98.026	15	244.3	103.8	23.1	5.8	10.5%	5.9%		
2136+141	21.65	14.393	66.292	52.608	15	74.8	48.8	8.5	-3.8	12.8%	-7.3%		
0235+164	2.644	16.616	58.104	40.83	15	66.5	54.5	8.4	13.6	14.5%	33.4%		
0402-362	4.065	-36.084	672.167	479.588	13	719.1	520.7	46.9	41.2	7.0%	8.6%		
0552+398	5.925	39.814	49.149	33.345	15	53.4	36.9	4.3	3.6	8.7%	10.7%		
0749+540	7.884	53.883	106.12	72.533	15	115.3	84.3	9.2	11.8	8.7%	16.3%		
0955+476	9.972	47.419	58.727	40.979	15	56.1	44.2	-2.7	3.2	-4.5%	7.8%		
3C274	12.514	12.391	171.619	222.899	8	229.9	210.4	58.3	-12.5	34.0%	-5.6%		

1334-127	13.628	-12.957	209.218	124.595	15	219.4	109.5	10.2	-15.0	4.9%	-12.1%
1417+385	14.33	38.363	203.435	463.039	6	334.1	528.4	130.7	65.4	64.2%	14.1%
1424-418	14.466	-42.105	253.957	296.018	15	288.9	341.4	35.0	45.4	13.8%	15.3%
1611+343	16.228	34.213	48.253	40.117	15	52.3	33.7	4.1	-6.4	8.4%	-16.0%
1749+096	17.859	9.65	53.406	35.929	15	79.8	34.5	26.4	-1.4	49.5%	-3.9%
1923+210	19.433	21.107	109.502	64.595	15	127.2	59.1	17.7	-5.5	16.2%	-8.5%
2113+293	21.258	29.561	104.609	121.118	15	135.6	118.1	31.0	-3.0	29.6%	-2.5%
3C446	22.43	-4.95	101.215	47.185	15	98.6	43.8	-2.6	-3.4	-2.6%	-7.1%
2255-282	22.968	-27.973	462.343	410.184	15	442.8	397.9	-19.5	-12.3	-4.2%	-3.0%
0048-097	0.845	-9.485	200.988	131.594	15	196.9	141.6	-4.1	10.0	-2.0%	7.6%
0119+115	1.362	11.831	196.448	151.439	14	184.4	200.9	-12.1	49.4	-6.1%	32.6%
0133+476	1.616	47.858	109.502	60.454	15	117.2	69.3	7.7	8.9	7.0%	14.7%
0458-020	5.02	-1.987	122.011	108.732	15	175.2	107.2	53.2	-1.5	43.6%	-1.4%
1124-186	11.451	-18.955	239.137	128.84	15	267.1	153.8	27.9	25.0	11.7%	19.4%
1128+385	11.515	38.255	92.186	107.4	15	104.6	107.7	12.4	0.3	13.5%	0.3%
1300+580	13.048	57.81	111.608	30.7	15	113.2	32.4	1.6	1.7	1.4%	5.4%
1418+546	14.33	54.387	217.136	180.052	15	264.5	200.4	47.4	20.3	21.8%	11.3%
1606+106	16.146	10.485	86.317	63.837	15	95.3	68.6	9.0	4.8	10.4%	7.5%
1741-038	17.733	-3.835	96.505	59.897	15	113.2	63.2	16.7	3.3	17.3%	5.5%
3C371	18.114	69.824	95.9	49.497	15	93.4	49.3	-2.5	-0.2	-2.6%	-0.3%
0003-066	0.104	-6.393	326.296	273.678	12	348.8	259.2	22.5	-14.4	6.9%	-5.3%
0059+581	1.046	58.403	114.441	39.063	15	89.6	44.6	-24.8	5.5	-21.7%	14.2%
CTA26	3.659	-1.777	131.15	52.642	15	138.2	54.8	7.0	2.1	5.4%	4.0%
0602+673	6.131	67.349	141.504	55.959	15	151.1	56.4	9.6	0.4	6.7%	0.7%
0607-157	6.161	-15.711	126.978	69.389	15	121.6	72.2	-5.4	2.8	-4.2%	4.0%
0743+259	7.774	25.817	67.381	63.075	15	69.3	64.7	1.9	1.6	2.8%	2.5%
0805+410	8.149	40.879	223.998	246.459	10	278.2	224.9	54.2	-21.5	24.2%	-8.7%
0823+033	8.431	3.157	128.119	234.055	15	158.2	239.6	30.1	5.6	23.5%	2.4%
1156+295	11.992	29.246	145.46	261.743	9	143.2	227.6	-2.2	-34.1	-1.5%	-13.0%
1357+769	13.965	76.723	207.261	34.697	15	230.4	37.6	23.1	2.9	11.2%	8.3%
1954-388	19.967	-38.752	145.56	228.856	15	187.8	344.0	42.3	115.1	29.0%	50.3%

The table below summarizes the improvement over all sources.

Summary	RA	Dec
#>0	50	43
Number	63	63
Median	10.1%	5.6%
Average	11.9%	8.2%

CONT05 % Improvement with Correlated Noise (ts4_all)

